CONTENTS

The Influence of Calcic and Magnesic Additions upon the Outgo of Sulfates from a	
Loam Soil as Measured by Lysimeter Leachings over an 8-year Period. W. H.	
MacIntire, W. M. Shaw and J. B. Young	1
Soil Acidity, an Ecological Factor. ARTHUR PIERSON KELLEY	41
Microbiological Analysis of Soil as an Index of Soil Fertility: VI. Nitrification. Selman	
A. Waksman.	55
Influence of Soil Moisture and Acidity on the Development of Potato Scab. WM. H.	
Martin	69
A Modification of the Truog Soil Acidity Test. F. W. PARKER AND J. W. TIDMORE	75
A Comparison of the Jones Calcium Acetate Method for Lime Requirement with the	
Hydrogen-Ion Concentration of Some Quebec Soils. EVERETT A. CARLETON	79
The Litmus Method for Detecting the Soil Reaction. Everett A. Carleton	91
Soil Profile Studies in Michigan. M. M. McCool, J. O. Veatch and C. H. Spurway	95
Comparative Effects of Muriate and Sulfate of Potash on the Soil in a Long Continued	
Fertilizer Experiment. F. W. Morse	107
The Influence of the Nitrogen Treatment on the Content of Nitrogen, Carbon and	
Phosphoric Acid in a Soil Varying in Mechanical Composition. A. W. BLATR AND	
A. L. Prince	115
Effect of Drying and Storage upon the Hydrogen-Ion Concentration of Soil Samples.	
CLAYTON O. ROST AND ERNEST A. FIEGER	121
Effect of Sulfur, Calcium and Phosphorus on the Yield and Composition of Alfalfa on Six	
Types of Idaho Soils. RAY E. NEIDIG, G. R. McDole and H. P. MAGNUSON	127
Partial Sterilization of Soil, Microbiological Activities and Soil Fertility: I. Selman	
A. Waksman and Robert L. Starkey	137
Influence of Calcic and Magnesic Treatments upon Sulfate Leachings from Soil Alone	
and with Additions of Ferrous Sulfate, Pyrite, and Sulfur. W. H. MACINTIRE, W.	4.50
M. Shaw, and J. B. Young	159
,,	102
Cultures. S. Lomanitz. Acidity of Highly Basic Soils. W. T. McGeorge.	
The Occurrence and Action of Fungi in Soils. ERNEST V. ABBOTT	207
A 5-Year Lysimeter Study of the Supposed Liberation of Soil Potassium by Calcic and	017
Magnesic Additions. W. H. MACINTIRE, W. M. SHAW AND J. B. YOUNG	
The Absorption of Ions by Plants. D. R. Hoagland	223
	247
A. WAKSMAN AND ROBERT L. STARKEY	
The Effect of Moisture on Soil Color. A. M. O'NEAL	
Organic Phosphorus of Soils. J. T. Auten.	
Equilibrium Studies of Sodium Carbonates and Bicarbonates in Some Idaho Soils.	201
RAY E. NEIDIG AND HARRY P. MAGNUSON	205
The Variant Rôles of Soil and Subsoil in Calcium-Magnesium Interchange. W. H.	293
MacIntire, W. M. Shaw and J. B. Young.	221
Partial Sterilization of Soil, Microbiological Activities and Soil Fertility: III. Selman	341
A. Waksman and Robert L. Starkey.	2/12
Convenient Supports for Plants in Pot or Water Culture Experiments. J. S. McHargue.	
Convenient Supports for Flants in Fot of water Culture Experiments. J. S. MCHARGUE.	337

CONTENTS

A New Apparatus for Mechanical Analysis of Soils. HARLAN W. JOHNSON	363
A Comparison of Sand and Solution Cultures with Soils as Media for Plant Growth.	
D. R. HOAGLAND AND J. C. MARTIN.	367
The Liberation of Potassium from Feldspars, and of Potassium and Carbon Dioxide from	
Soils by Fertilizer and Acid Treatments. S. C. VANDECAVEYE	389
The Leaching of Alkali Soil. J. E. Greaves, C. T. Hirst and Yeppa Lund	407
The Effect of Plants on the Concentration of Drainage Water from the Cornell Lysim-	
eters. Benjamin D. Wilson.	427
Studies on Virgin and Depleted Soils. C. E. MILLAR	433
Reciprocal Repression Exerted by Calcic and Magnesic Additions upon the Solubility of	
Native Materials in Surface Soil. W. H. MACINTIRE, W. M. SHAW, AND J. B.	
Young	449
Comparison of the Soil Solution by Displacement Method and the Water Extract of	
Alkali Soils. P. L. Hibbard.	465
The Hydrochloric Acid Method for Determining in the Soil the Cations present in an	
Absorbed Condition. K. K. GEDROIZ	473
Soil Flora Studies. Thomas L. Martin.	
Studies on Sulfur Oxidation in Oregon Soils. W. V. HALVERSEN AND W. B. BOLLEN	

PLATES

Partial Sterilization of Soil, Microbiological Activities and Soil Fertility: I	
Plate 1. Influence of 1 per cent of Toluene upon the fungous flora of the soil	157
A Preliminary Study of the Effects of Sodium Chloride upon Alfalfa Grown in Solution Cultures	
Plate 1. Alfalfa nine weeks old, grown in solution cultures	193
THE EFFECT OF MOISTURE ON SOIL COLOR	
Plate 1. Fig. 1. Clinton silt loam. Fig. 2. Tama silt loam	279
Convenient Supports for Plants in Pot or Water Culture Experiments	
Plate 1. Method of supporting plants	361
TEXT-FIGURES	
THE INFLUENCE OF CALCIC AND MAGNESIC ADDITIONS UPON THE OUTGO OF SUL- FATES FROM A LOAM SOIL AS MEASURED BY LYSIMETER LEACHINGS OVER AN 8-YEAR PERIOD	
Fig. 1. Pounds of SO ₂ per 2,000,000 pounds of soil in leachings from controls and silicate tanks	5
 Pounds of SO₃ per 2,000,000 pounds of soil in leachings from tanks treated with CaO. 	8
 Pounds of SO₃ per 2,000,000 pounds of soil in leachings from tanks treated with MgO equivalent to CaO. 	10
4. Pounds of SO ₂ per 2,000,00 pounds of soil in leachings from tanks treated with	
CaCO ₃ equivalent to CaO	12
MgCO ₃ equivalent to CaO	15
limestone equivalent to CaO	19
dolomite equivalent to CaO	26
 Pounds of SO₂ per 2,000,000 pounds of soil in leachings from tanks treated with Magnesite Equivalent to CaO 	31
Soil Acidity, An Ecological Factor	
Fig. 1. Graphs showing variation in acidity with depth	45 49

MICROBIOLOGICAL ANALYSIS OF SOIL AS AN INDEX OF SOIL FERTILITY: VI. NITRIFICATION	
Fig. 1. Influence of soil fertilization upon crop yield, numbers of microörganisms developing on the plate and nitrifying capacity of the soil	4
A Comparison of the Jones Calcium Acetate Method for Lime Requirement with the Hydrogen-Ion Concentration of Some Quebec Soils	
Fig. 1. Hydrogen Electrode and Vessel	
Partial Sterilization of Soil, Microbiological Activities and Soil Fertility: I	
 Fig. 1. Influence of toluene and heat upon numbers of bacteria, fungi and accumulation of soluble nitrogen in an acid soil rich in organic matter (5A)	2
Influence of Calcic and Magnesic Treatments upon Sulfate Leachings from Soil Alone and with Additions of Ferrous Sulfate, Pyrite, and Sulfur	3
 Fig. 1. Influence of CaO, MgO, limestone and dolomite upon leaching of sulfates derived from soil and rainfall and recovery of added FeSO4, with and without CaO and MgO, as determined from periodic leachings over a 5-year interval	
A Preliminary Study of the Effects of Sodium Chloride upon Alfalfa Grown in Solution Cultures	
Fig. 1. Graphs showing yields of tops, roots, and whole plants, relative to check taken as 100	8
A 5-Year Lysimeter Study of the Supposed Liberation of Soil Potassium by Calcic and Magnesic Additions	
Fig. 1. Increase or decrease in 5-year potassium outgo as caused by calcic and magnesic treatments of chemical equivalence	2
THE ABSORPTION OF IONS BY PLANTS	
Fig. 1. Absorption of ions from solutions of KNO ₃ and Ca(NO ₃) ₂ of different concentrations	

PARTIAL STERILIZATION	OF SOIL,	MICROBIOLOGICAL	ACTIVITIES	AND	Soil
	FE	RTILITY: II		*	

Fig.		Course of biological activities in undisturbed soil	
		Influence of tillage on biological activities in soil	
	3.	Influence of CaO on biological activities in soil	252
	4.	Influence of CaCO ₃ on biological activities in soil	254
	5.	Influence of air-drying and subsequent remoistening on biological activities in	
	8	soil	
	U.	activities in soil	
	7.	Influence of length of time a soil is air-dry upon its carbon-dioxide production	20.
		upon being remoistened	
	8.	Influence of heating on biological activities in soil	258
		Influence of heating and reinoculation on biological activities in soil	
		Influence of toluene on biological activities in soil	
		Influence of toluene and reinoculation on biological activities in soil	
		Influence of CS2 on biological activities in soil	
		Influence of CS2 and reinoculation on biological activities in soil	
		Influence of organic matter on biological activities in soil	
		Influence of sulfur on biological activities in soil	
	16.	Carbon-dioxide production effected by various treatments—Total CO2 produced	0.48
		during first week after treatment	267
	Eq	QUILIBRIUM STUDIES OF SODIUM CARBONATES AND BICARBONATES IN SOME IDAHO SOILS	
Fig	1	Curves representing sodium carbonate and sodium bicarbonate added to and	
r.g.	1.	recovered from palouse silt loam, when kept at a moisture content of 15 to 20 per cent.	206
	2	Curves representing sodium carbonate and sodium bicarbonate added to and	300
	400	recovered from Caldwell silt loam subsoil, when kept at a moisture content of	
		15 to 20 per cent.	307
	3.	Curves representing sodium carbonate and sodium bicarbonate added to and	
		recovered from Boise silt loam containing natural alkali chlorides and sulfates,	
		when kept at a moisture content of 15 to 20 per cent	308
	4.	Curves representing sodium carbonate and sodium bicarbonate added to and	
		recovered from Boise silt loam free from alkali chlorides and sulfates, when kept	
		at a moisture content of 15 to 20 per cent	309
	5.	Diagram representing successive sodium carbonate and sodium bicarbonate	
		treatments and respective salt recovery at the end of each series	313
	6.	Diagram representing successive sodium carbonate and sodium bicarbonate	
		treatments and respective salt recovery at the end of each series	314
	Co	NVENIENT SUPPORTS FOR PLANTS IN POTS AND WATER CULTURE EXPERIMENTS	
Fig.	1.	Method of making metal sockets for props	360
		A New Apparatus for Mechanical Analysis of Soils	
Fig.	1.	Curves showing actual points as located by balance	364
		Curves of three soils not deflocculated	
		Curves of three soils deflocculated	364
	4.	Curves of two soils drawn as though recording mechanism were revolving twelve	
		times as fast	364
	8.	Automatic recording balance arranged for making mechanical analyses of soils	365

	ATION OF POTASSIUM FROM FELDSPARS, AND OF POTASSIUM AND CARBON DIOXIDE FROM SOILS BY FERTILIZER AND ACID TREATMENTS
	owing the effect of manure extract and acid treatments on solutions con- corthoclase and alunite
	nowing average increase in water-soluble potassium and pH values of ferent treatments after sixteen weeks
liberat relatio	nowing the relation between the production of carbon dioxide and the ion of water soluble potassium in sterile and non-sterile soils, and the n of the pH value to the production of carbon dioxide, or the liberation of
water-	soluble potassium in the same soils
	STUDIES ON SULFUR OXIDATION IN OREGON SOILS
Fig. 1. Water-ho 2. Sulfur, su	Ilding capacity and sulfur oxidation

